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ABSTRACT

Developed by the ABCs of Construction National Workplace Literacy Project, these curriculum materials for the occupational area of millwright contain three lessons that deal with getting meaning from context. Each lesson consists of an objective, instruction, and exercises. Lesson 1 contains seven exercises, Lesson 2 has four, and Lesson 3 has eight. The objectives for the lessons are for the student to be able to define words using clues in the sentence provided by the author, to define unknown words through examples given in the sentence, and to define unknown terms by examining the familiar words that surround the terms. (YLB)

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ED 374 295

TECHNICAL DEVELOPMENT CENTER

Meaning from Context

Millwright

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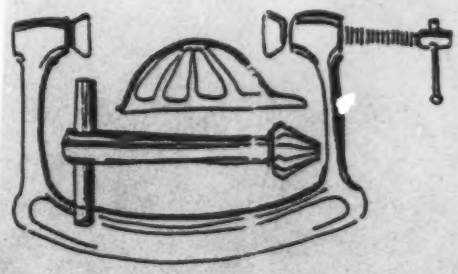

Associated Builders & Contractors, Inc.
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ABC's of Construction
National Demonstration Project in Workforce Literacy

The ABC's of Construction Project was funded in 1991 by the U.S. Department of Education as a grantee through the National Workplace Literacy Program (PR #198A10155). The program provided basic skills instruction to industrial construction workers employed by companies which are members of the Pelican Chapter of Associated Builders and Contractors (ABC). Located in Baton Rouge, Louisiana, ABC provides training to employees of over 60 member companies who perform contract work in the 58 petrochemical facilities located along the Mississippi River between Baton Rouge and New Orleans.

The grantee, the Adult Education Department of East Baton Rouge School Board, performed a comprehensive literacy task analysis of the apprenticeship training program for millwrights, pipefitters, electricians, instrumentation techs, and welders involved in the ABC training program. Over 20 modules of original, contextual curriculum were developed to teach the reading and math skills required for success in the craft training program.

Materials developed for instruction incorporated cognitive strategies for learning basic skills in the context of the craft and safety knowledge demanded by the industrial construction workplace. Instruction was written for a competency-based, open-entry/open-exit, individualized adult learning program that operated at the ABC training center in the evenings after work-hours.

By the end of this lesson, you will be able to define words using clues in the sentence provided by the author.

Objective

Instruction

Have you ever heard the old saying "It's Greek to me?" People sometimes say this when faced with confusing information. This often happens when people start to learn a new subject. That's because every subject has words that are unique to it. These words make up the technical vocabulary of a field. For example, consider the word swing-shift. Because you are familiar with construction work, you know what this means. However, someone new to construction would be confused. Swing-swift would be Greek to them.

Because authors know that technical words are confusing, they often define them when they use them. Authors use two methods to do this. Sometimes they define the word in a statement. Other times they use parentheses ( ) or other punctuation to define the word.

Consider the two sentences below.

> **Explosive power fastening is the use of a controlled explosion to force fasteners into materials.**
>
> **Explosive power fastening (the use of a controlled explosion to force fasteners into materials) began during World War II.**

The first sentence shows a definition context clue. To determine the meaning of explosive power fastening, you read the sentence. The verb is shows that the definition of explosive power fastening comes before or after it. Similarly, other verbs also indicate definitions. These include words like was, are, means, involves, that is, is called, and resembles. When you see words like these, you know that the author has provided definitions to technical terms. If the term is new to you, you might mark it in your text or notes.

The second sentence shows a punctuation context clue. Here the author has defined the word and placed the definition in the sentence. It is separated from the rest of the sentence by commas. Authors often use dashes (--), parentheses ( ), or brackets [ ] as well as commas to do this. Thus, when you see a word you do not know, look at the sentence to see if commas, brackets, dashes, or parentheses are present. If so, read the information between them. There's a good chance the definition you're seeking is found there. Sometimes authors reverse this. They define technical vocabulary in the sentence. Then they put the more common definition inside sets of punctuation. For the most part, your text uses parentheses to signal definitions or new terms.

1 Bob is a new worker. His boss is worried that Bob needs more safety information. While reading, Bob finds these two sentences confusing.

> **In 1970, the United States Congress was concerned about the need for safer and healthier working conditions. Many people were concerned about occupational (job-related) accidents.**
>
> **The environment - the land, air, and water - is the basis of all life. Protecting the environment means protecting life.**

1) What does occupational mean?

2) What does environment mean?

3) How did you determine these meanings?

2 Jim needs a straightedge to mark where he will cut a piece of metal. Someone suggests he use a flat steel square. Jim is unfamiliar with this tool so he uses his folding rule. Later, he finds a description of a flat steel square. This is what he reads:

> **FLAT STEEL SQUARE**
> **The flat steel square (commonly called a framing or carpenter's square) consists of a blade and a tongue at right angles. The sides of this square are divided into inches and fractions of an inch, and come in different lengths. Both tongue and blade may be used as a rule and as a straightedge.**

1) By what other name might Jim have known a flat steel square?

_____

_____

_____

_____

2) What is a flat steel square?

_____

_____

_____

_____

3) How might a flat steel square be used?

_____

_____

_____

_____

3 Jill needs to copy a piece of an electrical generator. Her measurements must be exact and within specified tolerances, she needs to use a micrometer. Jill is unfamiliar with this tool. She decides to read about it before beginning work.

A micrometer is a measuring tool used to take exact measurements of parts that are still. The basic parts of the micrometer are the frame, anvil, spindle with precision screw thread, sleeve (also called a barrel or hub), and thimble. The thimble is marked in .25 graduations. On some micrometers, a ratchet and spindle lock are also available.

1) What is a micrometer?

_____

_____

_____

_____

2) By what other names is the sleeve called?

_____

_____

_____

_____

4 Jerry does not understand torque. When he reads his textbook, he finds this description:

> **Torque is a twisting force. Almost all bolts and nuts are made to withstand a certain amount of torque before the bolt is twisted in half or the threads are stripped. Usually this strength, or torque factor, is much greater than any twisting force used on the bolt.**
>
> **In the United States, torque is usually measured in inch-pounds or foot-pounds. Foreign countries use other terms such as kilogram-meters and newton-meter. This unit will use foot-pounds and inch-pounds for measuring torque.**

1) What does torque mean?

_____

_____

_____

_____

2) What is torque factor?

_____

_____

_____

_____

5 Mark's supervisor told Mark that he needed to review the meanings of level and plumb. Mark went to his old ABC textbook. He found the section which taught these words.

> **Before learning to use levels and lines, you should learn the meaning of level and plumb. Level refers to horizontal surfaces. A level surface is one that has no point higher than another. Plumb refers to vertical surfaces. A plumb surface is at right angles to a level surface, or straight up and down.**

1) When a person talks about something being level, he/she is talking about what direction?

_____

_____

_____

2) When a person talks about something being plumb, he/she is talking about what direction?

_____

_____

_____

3) What does a level surface look like?

_____

_____

_____

4) What does a plumb surface look like?

_____

_____

_____

6 Joyce has been given a job doing layout work. She has to take measurements and add, subtract, multiply, and divide fractions. Because math has never been her greatest strength, she decided to review.

To divide fractions, the dividend (the fraction being divided) is written as a numerator, and the divisor (the fraction doing the dividing) is written as a denominator. For example, 3/8 divided by 1/2 is written:

$$\frac{3/8 \text{ (dividend)}}{1/2 \text{ (divisor)}}$$

The rule for dividing fractions is simple. Invert ("turn over") the divisor and multiply it by the dividend. For example:

$$\frac{3/8}{1/2} = \frac{3}{8} \times \frac{2}{1} = \frac{3}{4}$$

(Invert and multiply. Remember to simplify by dividing the 2 and the 8 by 2.)

To divide mixed numbers, first change them to improper fractions. Invert, simplify, and multiply numerators and denominators. Change the final improper fraction to a mixed number. For example:

$$7\text{-}3/11 \div 3\text{-}2/11 = \left[\frac{7\text{-}3/11}{3\text{-}2/11}\right] = \left[\frac{80/11}{35/11}\right] = \frac{80}{11} \times \frac{11}{35} = \frac{16}{1} \times \frac{1}{7} = 16/7 = 2\text{-}2/7$$

1) What is a dividend?

_____

_____

_____

_____

2) What is a divisor?

_____

_____

_____

9 10

3) What does <u>invert</u> mean?

By the end of this lesson, you will be able to define unknown words through examples given in the sentence.

Objective

How are ice cream, pie, candy, and cookies alike? Yes, they are all sweets. The same skill you used in finding what these foods have in common serves you well in finding the meanings of words you don't know. For example, consider the following sentence taken from instructions for changing saw blades:

Instruction

> **You will also need a block of wood or a large dowel or nail to wedge against the blade while you are turning the nut.**

To determine the meaning of dowel, you consider the other items you could use as a wedge. These are a block of wood and a nail. What do these have in common? Both are made of strong and solid materials. Both would need to be big enough to keep a saw blade from moving. Thus, you decide that a dowel is something large, strong, and solid enough to keep a saw blade steady.

This meaning is probably not what you'd find in a dictionary. But it is enough to help you make sense of what you're reading. Often an idea of a word's meaning is all you need.

7 Mary is about to use explosive power tools for the first time. She is concerned with safety. Her supervisor suggested she reread the part of her text which tells how to use these tools. When Mary reads step 4, she sees a new word, obstruction.

> **Step 4**
> **Before loading, always inspect the barrel, breech plug, and breech face to make sure no dirt, grit, or other obstructions are caught on the working surface.**

Try it:

1) Explain the process by which Mary could figure out the meaning of obstruction.

_____

_____

_____

_____

Apply it:

2) What does obstruction mean?

_____

_____

_____

_____

8 Bob's boss has told him that he will need a masonry bit on his next job. Bob wonders what kind of work he will be doing. He hopes the textbook description of a masonry bit will help him.

> **Another type of drill is the masonry bit. This bit is used to drill brick, concrete, or other masonry material. It has a carbide tip and cannot be used for drilling wood or metal. This bit is used at a slower drilling speed than the twist drill bit.**

1) What does masonry mean?

_____

_____

_____

_____

2) List the steps you took in finding the meaning of masonry?

_____

_____

_____

_____

9 Greg's wife is concerned about his work. After all, job accidents in 1970 caused more than 14,000 deaths. To make her feel better, Greg had his wife read the page in his textbook which talks about the purposes of OSHA (the Occupational Safety and Health Act of 1970.)

> **1.9 The Purposes of OSHA**
>
> **OSHA was created for the following purposes.**
>
> **1. To make sure (as far as possible) that every worker in the United States has safe and healthful working conditions**
>
> **2. To make sure that employers furnish employees with a job site free of recognized hazards that might cause serious injury or death.**
>
> **3. To make sure that employees follow OSHA safety and health rules, standards, regulations, and orders.**
>
> **4. To administer and enforce this Act.**

1) Greg's wife is confused about the word regulations. She plans to look it up in a dictionary. Why is this not the best way to find its meaning?

_____

_____

_____

Try it:

2) Greg tells his wife there's another way to find the meaning of regulations. What should Greg say to her to show her how to use examples to find meaning?

_____

_____

_____

Apply it:

3) What does regulations mean?

_____

_____

_____

10 Nancy is taking the self-check unit test on safety. She reads the five questions on the last page before answering any of them. A word in question number 10 confuses her.

6. OSHA is a regulatory agency that establishes safety standards and enforces their use.

a. True
b. False

7. The Environmental Protection Agency (EPA) was created to help protect and preserve national resources.

a. True
b. False

8. The Nuclear Regulatory Commission (NRC) is responsible for issuing licenses for nuclear power plant construction.

a. True
b. False

9. Poor housekeeping is not a common cause of accidents.

a. True
b. False

10. Horseplay and pranks create unsafe conditions and cause accidents.

a. True
b. False

1) What does horseplay mean?

_____

_____

_____

2) Can you think of why this action is given this name?

_____

_____

_____

11 Marion has been assigned to demonstrate the use of an impact wrench in class. He plans to use the information in his text to talk about the wrench. When he reads this section, he finds a word he does not know.

> **Impact wrenches are air-powered or electric-powered tensioning tools used to maintain equipment. Impact wrenches can set, run, and remove bolts, nuts, studs, and screws. They are similar to drills except they have a square drive where the chuck should be.**

Try it:

1) How could Marion find the meaning of stud?

_____

_____

_____

_____

Apply it:

2) What is the meaning of stud?

_____

_____

_____

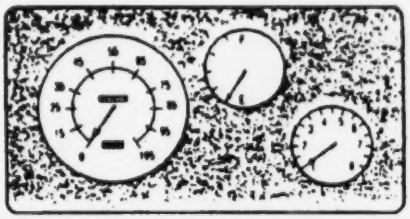
_____

By the end of this lesson, you will be able to define unknown terms by examining the familiar words which surround the terms.

Objective

Instruction

What is this? What does it do? You probably guess this is a dial, but you can't be sure.



Now you know the figure is part of the instrument panel on a machine. It could be an oil or a gas gauge. It could even be a speedometer or clock.

Your skill in figuring out a part of something grows with your skill in figuring out its connection with its surroundings. It was hard to know exactly what the dials were and did in the first picture. That's because there are too few clues around it. Even though dials are common, the dial was out of context, the surroundings which give meaning.

Words, too, have contexts which give meaning to them. Contexts, then, can help you find the meanings of words you do not know. How does this happen??

Suppose you are planning a trip. You decide you would like to visit either New York City, Colorado, or Florida. How do you choose among them?

Your mind holds memories of each of these places. You know that in New York City, you will visit museums, see plays, shop and sightsee. You relate Colorado with mountains, snow, and skiing. In Florida, you feel you'd spend most of you time sunning on the beach or swimming in the water. Each of these descriptions shows your associations with each of these places.

Like an guide word in a reference book, the name of a place calls forth memories from your brain. Sometimes, reference books give other words which relate to the same topic. Similarly, one memory is connected with another. When you think about a place, you think about its weather, its buildings, its people, and so forth. Your memory connections grow all the time.

Just like places, you have memories of words. To find meanings of unknown words in sentences, you use memory connections to make a decision about what a word means. You do not seek a perfect definition for the new term. Instead, your memory connections lead you to a meaning that makes sense. Often, this is all the definition you need.

For example, consider the word detergent in the passage below:

> **Normally, you should not oil the working parts daily because excess oil will collect DUST and DIRT. You can see dirt in the barrel threads or in the breech, or if the action seems sluggish, the tool should then be CLEANED. All parts should be CLEANED with an oily RAG and a wire BRUSH supplied with the tool kit. Use a good detergent oil as a CUTTING AGENT. REMOVE ALL HEAVY DIRT and carbon buildup with the brush. After CLEANING, remove excess oil. Leave only a thin oil film on each part.**

While the text does not define detergent for you the words dust, dirt, cleaned, rag, brush, remove all heavy dirt, and cleaning let you know detergent refers to something which cleans. The words cutting agent tell you that a detergent is used against difficult dirt. Thus, you conclude that a detergent is a strong cleanser.

To use memory connections to find meanings, you first read the paragraph where the new term is found. Then you ask yourself "What is this paragraph about? What is this sentence about?" Answering these insures you're using the right memory connections. Then you look for words in the sentence that seem to be about the same subjec. These words will seem to "go together." By thinking about these clues and the subject of the paragraph, you create a meaning for the unknown word. With that meaning in mind, you reread the sentence. Does it make sense? If so, you've produced a good working definition. If not, you need to try again.

12 Your instructor has asked you to make a report on safety. After reading the text, you discover two words you do not know. Use surrounding words to identify the meaning of hazards and the meaning of statistics.

A construction site is a dangerous place to work. Large numbers of workers, many different types of equipment and vehicles, and many different jobs are all possible causes for accidents. All construction workers should be able to recognize the dangers on a job site and should work to eliminate accidents and injuries. Recognizing hazards and following all safety rules can make construction work safer for all workers.

In 1970, the United States Congress was concerned about the need for safer and healthier working conditions. Many people were concerned about occupational (job-related) accidents. The following annual statistics show this problem.

- **Job-related accidents had caused more than 14,000 deaths.**
- **Nearly 2.5 million workers were disabled.**
- **Ten times as many man-days were lost from job-related disabilities as from other lost time activities.**
- **Estimated new cases of occupational diseases totalled 300,000.**

1) Define hazards.

_____

_____

_____

_____

2) Define statistics.

_____

_____

_____

_____

3) Provide an example of a hazard.

4) Provide an example of a statistic.

13 You are using a hacksaw. According to the following instructions, you are to blow away the cuttings. What are cuttings?

_____

_____

_____

_____

1.7 Hacksaw Use

Place the saw on the cutting line. Keep the saw in line with your forearm and begin with light, short strokes. Then increase the strokes to the full length of the blade. Apply light pressure on the forward stroke, because the cutting teeth of the hacksaw blade point forward. The teeth do not cut on the back stroke, so no pressure should be applied.

While sawing, keep your eye on the cutting line rather than on the saw. Watching the line lets you see and correct any movement away from the line. A slight twist of the handle while using short strokes will bring the saw back to the cutting line. Blow away the cuttings frequently so you can see the line.

When you near the end of the cut, saw slowly. Hold the waste piece in your other hand so the material will not fall as you make the last stroke.

14 You are using a rasp and a file. According to the following passage, rasps and files are brittle. What does this mean?

_____

_____

_____

_____

1.11 Rasp and File Use

Most rasps and files have the tang type handle attachment. Always put on a handle before using the tool, to avoid injuring your hand on the tang. If you must use a handle with a hole too small for the tang, take an old file with the same size tang and heat it red hot. Use the heated tang to burn out the handle hole to the right size. Before you put the handle on, wet the tang. To seat the tang firmly in the handle, tap the butt of the handle on a hard surface. Do not hammer the file into the handle.

Files and rasps are very brittle, and they must never be cleaned by striking them against a hard object. Filings should be brushed from between the teeth with a wire-brush, pushed in the same direction as the line of the teeth. Any particles that stick should be removed with a pointed piece of some soft metal, such as brass or copper. A soft metal is used to avoid damaging the teeth of the file.

15 You are planning to use a bench vise. According to the following text some vises have a swivel base. What does this mean?

What benefit would this be?

1.60 Bench Vises

The bench vise is a holding device used to hold objects. It consists of fixed and movable jaws, the screw and nut assembly, the handle, and the jaw inserts, as shown in Figure 1-35.

Some vises have swivel bases so the vise can be turned in any horizontal direction. Bench vises are classified in size by the width of the jaws.

16 Your boss has told you that you will need a torque wrench on your next job. As you review what your text says about torque, you are concerned. What does stripped mean?

_____

_____

_____

_____

Do you need to worry greatly about this? _____

_____

Why or why not?

_____

_____

_____

_____

Torque is a twisting force. Almost all bolts and nuts are made to withstand a certain amount of torque before the bolt is twisted in half or the threads are stripped. Usually this strength, or torque factor, is much greater than any twisting force used on the bolt.

In the United States, torque is usually measured in inch-pounds or foot-pounds. Foreign countries use other terms such as kilogram-meters and newton-meters. This unit will use foot-pounds and inch-pounds for measuring torque.

A torque wrench is used to apply the correct amount of torque to a bolt. There are three basic types of torque wrenches as shown in Figure 2-19. These are:

1. **Beam torque wrench**
2. **Dial Torque wrench**
3. **Micrometer setting torque wrench.**

17 Using explosive power tools concerns you. According to the passage below, the power tool will not fire unless it is flush with the top of the handle. What does this mean?

_____

_____

_____

_____

5.8 Angle Fire Control

Angle fire control is a built-in safety feature. This means the explosive power tool will not fire unless it is at right angles to the work surface and the firing pin indicator is flush with the top of the handle. When the tool is tilted eight degrees or more, the firing pin indicator disappears into the handle. This means the firing pin is out of line with the trigger, and the tool will not fire.

18 One of your co-workers is always borrowing your drilling tools. Because he is a "butter fingers," he seems to drop them more often than not. He worries that he will break one of them. He reads his text to see if he should be concerned. He doesn't understand the word rugged. How would you explain how he could find its meaning?

_____

_____

_____

_____

What does rugged mean?

_____

_____

_____

_____

One of the most common industrial power tools is the portable power drill. This tool is also called a pistol grip drill or offset handle drill. Powered by air or electricity, the portable power drill is used to drill holes in wood, metal, fiberglass, brickwork, and concrete. With attachments, the drill can be used for sanding, grinding, screwing, and sawing holes. Most of the time, the drill is used to drill holes.

The drills that you will work with are the industrial or commercial-grade drills. Industrial tools are made for heavy-duty, rugged, and frequent use.